



Overview of Potential LID Code and/or Policy Gaps

The Stormwater Low Impact Development (LID) Code Review Project is being implemented to meet the City of Kirkland's obligations under its Municipal Stormwater Permit. The goal of the project is to identify where potential code and/or policy changes are needed to make stormwater LID the preferred and commonly used approach to site development in Kirkland.

This document represents the code and policy analysis performed by City staff. The Tables listed below were created to address the following development topics:

Table 1: Landscaping, Native Vegetation, and Street Landscaping

Table 2: Site Planning and Assessment

Table 3: Hard and Impervious Surfaces

Table 4: Bulk and Dimensional Considerations

Table 5: Subdivision and Planned Unit Development

Table 6: Critical Areas and Shoreline Management

Table 7: Clearing and Grading

Table 8: Streets and Roads

Table 9: Healthy Soils

Table 10: Parking

Table 11: Design Guidelines and Standards

Table 12: Stormwater Management and Maintenance

Within each topic table, staff compared Kirkland's current regulations to a set of recommended LID principles and Best Management Practices (BMPs). The "Summary of Gap" column explains if a gap was found (or no gap). The next column describes either why no revision is needed, or what action will be considered to address a gap. Rows highlighted in gray are items staff determined warranted further consideration for change. Kirkland is not required to change everything highlighted in this initial analysis. A deeper analysis of highlighted items will be undertaken before changes are recommended to our Planning Commission, Houghton Council, and Kirkland City Council.

Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Tree preservation/retention								
Kirkland Zoning Code, relating to Tree retention with Development Activity	KZC 95.33 Tree Density Requirement	Min tree density is 30 tree credits per acre, use tree credit table.	Place greater emphasis on conifer preservation	Consider a different system for retaining and replacing trees. Consider modifying Tree Credit table to look at area of native vegetation (or % of site in native veg) in addition to number/size of trees and to give extra points for use of conifers of a similar size as deciduous trees.	Modify existing Tree Credit Table to give more credit for conifers (place more emphasis on conifers).		X	
Kirkland Zoning Code, relating to Tree removal on Private Property	KZC 95.23 Tree Removal Not Associated with Development Activity	1-Tree density requirement is 6/acre. Allows removal of 2 significant trees per 12 months (except critical area/buffers). Additional tree removals must meet hazard/nuisance criteria. Replacements req'd only with last 2 trees on property. Significant tree= min 6" diam 4.5' from ground height. 2-Only hazard/nuisance trees may be removed in critical areas; 1:1 replacements required.	Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces.	No Gap. Chapter 95 revision in 2017/2018 will: 1- Consider a trigger for tree replacement prior to last 2 trees on property. Consider # of overall tree removals allowed proportionate to size of property. 2-Consider restoration area in addition or increase replacement ratio.	No Revision - Existing code meets minimum requirement to retain and replace native vegetation		X	
Kirkland Zoning Code, relating to Tree removal on Private Property	KZC 83.400 Tree Management & Vegetation in Shoreline Setback	Tree removals require like-for-like replacement depending on size. >24" dbh removal not allowed unless hazard or nuisance.	> 12" dbh tree requires additional prescribed vegetation in defined area.	No Gap	No Revision - Any changes must be reviewed by Ecology		X	
Kirkland Zoning Code, relating to Tree removal on Public Property	KZC 95.23 Tree Removal Not Associated with Development Activity	Permit required. Only hazard/nuisance ROW trees may be removed. 1:1 replacement required for street tree removal.	Retain and replace native vegetation	No Gap	No Revision - Existing code requires retention and replacement of trees already required.		X	
Kirkland Zoning Code, relating to Tree retention with Development Activity	KZC 95.30 Tree Retention Associated with Development Activity	Tree Retention Plan based on tree retention value.	Retain and replace native vegetation	No Gap. Chapter 95 revision in 2017/2018 will consider changing from minimum # of individual trees to a minimum % area.	No Revision - Existing code meets minimum requirement to retain and replace native vegetation		X	
Kirkland Zoning Code, relating to Tree retention with Development Activity	KZC 83.400 Tree Management & Vegetation in Shoreline Setback	Tree removals require like-for-like replacement depending on size. >24" dbh removal not allowed unless hazard or nuisance.	> 12" dbh tree requires additional prescribed vegetation in defined area.	No Gap	No Revision - Any change must be reviewed by Ecology		X	
	KZC 95.32 Incentives and Variations to Development Standards	Incentives and variations are allowed in the site design to retain trees with a high retention value (for example, variations in parking areas and access, minor adjustments to location of building footprints, walkways, easements, utilities, etc.).	Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces.	No Gap	No Revision - code allows process for for proposal for variation in site design to retain native vegetation.		X	
	KZC 114 Low Impact Development	Current code incentivizes protected area of trees/native vegetation, includes minimum 40% open space required, maintains existing native vegetation in open space.		No Gap	No Revision - Current code incentivizes protected area of trees/native vegetation, includes minimum 40% open space required, maintains existing native vegetation in open space.		X	
Tree preservation/retention								
Kirkland Zoning Code, relating to Tree retention with Development Activity	KZC 70 Holmes Point Overlay	Current Code limits the amount of impervious lot coverage, therefore an increased amount of native vegetation is saved (see lot coverage table).	Retain and replace native vegetation, place greater emphasis on conifer preservation, include strategies to orient retained vegetation and open space to disconnect impervious surfaces.	No Gap	No Revision needed - Current Code limits the amount of impervious lot coverage, therefore an increased amount of native vegetation is saved (see lot coverage table).		X	
		Current Code requires 25% of total lot area (min) designated as Protected Natural Area (PNA)		No Gap	No Revision - Current Code requires 25% of total lot area (min) designated as Protected Natural Area (PNA)		X	
		Current Code requires all significant trees to be retained.		No Gap	No Revision - Current Code requires all significant trees to be retained.		X	
Kirkland Municipal Code	KMC 1.12.100 Code Enforcement, Special provisions relating to enforcement of tree regulations	Restoration plan required, fines assessed per tree for unauthorized tree removal (\$100 to \$1,000). If intentional violation, fines can be based on the city-appraised tree value.	Are there regulatory controls over tree clearance and removal?	No Gap	No Revision - Current code requires restoration plan and gives the city ability to assess fines.		X	

Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping (continued)								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Screening								
Kirkland Zoning Code	KZC 95.40 Required Landscaping, KZC 95.41 Supplemental Plantings	95.40, Item 2. Use of Significant Existing Vegetation, 95.41, Item 2a. Standards for Supplemental	Can the screening requirements be revised to include provisions for retaining native vegetation and replanting?	Consider code modifications to include preference for native species, and expansion of the Kirkland Native Plant List.	Modify code to add preference for native species. Revise Kirkland Native Plant List.		X	
Kirkland Zoning Code	KZC 95.42 Minimum Land Use Buffer Requirements	95.42 Item 1 and Item 2 (applicable to Standard 1 and Standard 2)	Consider allowing vegetation in LID facilities to count towards site, parking, or perimeter screening requirements.	Consider code modifications to include language allowing vegetation in LID facilities to count towards perimeter, site and parking screening requirements.	No Revision - bioretention does not provide enough perimeter, site, or parking screening. Bioretention can still be used to meet stormwater requirements, but vegetation screening requirements are in addition to those requirements.		X	
Landscape requirements for street frontages								
Kirkland Zoning Code	KZC 95.40 Required Landscaping	Variance and incentive process is in place to encourage retention of existing vegetation, landscaping is required along street frontages and between sidewalk and parking.	Include other landscaping between the sidewalk and the street. Allow vegetation in LID facilities to count towards open space or landscape requirements.	No Gap	No Revision - Development Tree plans include Right-of-Way trees. Efforts are made to retain trees wherever feasible. City requires landscaping to be installed in landscape strips and any excess areas in the ROW.	X		
	KZC 110	Requires landscaping and ground cover in the Right-of-Way.		No Gap	No Revision - code requires landscaping and ground cover in ROW (and standards allow groundcover other than turf grass).	X		
Kirkland Public Works Pre-Approved Plans	Policy R-10, Street Tree Selection list	Current policy allows for trees in LID facilities to be counted towards street tree requirements.		No Gap	No Revision - Current policy allows for trees in LID facilities to be counted towards street tree requirements.	X		
Kirkland Public Works Pre-Approved Plans	Policy R-10, Street Tree Selection list	Current policy requires street trees, and allows other approved vegetation in addition to those trees (like LID facilities).		No Gap	No Revision - Current policy allows other approved vegetation in addition to street trees (like LID facilities containing trees).	X		
Landscape requirements for parking lots								
Kirkland Zoning Code	KZC 95.44 Internal Parking Lot Landscaping Requirements	Requires min 1 tree (per 25sf) and other groundcover (per parking stall)	Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements.	Lacks language to allow LID facilities to count towards landscape requirements.	Modify code to specify that LID facilities count towards landscape requirements, but keep tree requirement. Reference COK PW Pre-Approved Plans.		X	X
Kirkland Zoning Code	KZC 95.45 Perimeter Landscape Buffering for Driving and Parking Areas	5' wide strip, Right-of Way of trees and live groundcover	Include minimum tree canopy, native vegetation, and allow vegetation in LID facilities to count towards open space or landscape requirements.	Lacks language to allow LID facilities to count towards landscape requirements	Modify code to specify that LID facilities count towards landscape requirements. Reference COK PW Pre-Approved Plans. Additional language regarding natives could be considered in a subsequent city code review.			X
Kirkland Public Works Pre-Approved Plans	Bioretention Details Plan No. CK-L.01,L.02, L.03, L.04	Existing Bioretention standard details can be used in parking lots.	Allow vegetation in LID facilities to count towards open space or landscape requirements.	No Gap	No Revision - current details for LID facilities can be used in parking lots.			X
Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets)								
utility setbacks for trees								
COK PW Pre-Approved Plans	General Section	Not addressed in current code. Current process is utility plan comes in, PCD and PW review and come to an agreement. Handled on a case-by-case basis, with understanding trees are saved whenever possible.	Retain native vegetation	"Understanding" is not identified in a written policy, consider creating a written policy for the Pre-Approved Plans.	Establish new Policy in Pre-Approved Plans regarding utility setbacks for trees; also include street improvements. Specify trees should be saved whenever possible.		X	
public safety (site limits at intersections, hazard trees)								
Kirkland Zoning Code	KZC 95.20 Exemptions: (1)Emergency Tree Removal, (2)Utility Maintenance	Tree removal allowed for public safety.	Retain native vegetation, good soil	No Gap	No Revision		X	
	KZC 95.23.5.d. Removal of Hazard or Nuisance Trees	Tree Risk Assessment Report required.		No Gap	No Revision		X	

Table 1. Gap Analysis for Topic: Landscaping, Native Vegetation, and Street Landscaping (continued)						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
tree and landscape installation and maintenance								
Kirkland Zoning Code	KZC 95.50 Installation Standards for Required Plantings	Soil specs, Kirkland Plant List	Retain native vegetation, good soil	No Gap	No Revision - Existing code requires good soils, avoid compaction, and mulch.			X
	KZC 95.51 Tree and Landscape Maintenance Requirements	Soil specs, Kirkland Plant List		No Gap	No Revision - Existing code requires good soils, avoid compaction, and mulch.			X
Kirkland Public Works Pre-Approved Plans	Policy R-10, Street Tree Selection list	Includes native vegetation appropriate to our area.		No Gap	No Revision - Existing policy includes native vegetation appropriate to our area.			X
	Tree Planting Details R.48, R.48A	Tree Planting Details require amended soil per Ecology BMP T5.13.		No Gap	No Revision - Existing standard requires amended soil per Ecology BMP T5.13.			X

Table 2: Gap Analysis for Topic: Site Planning and Assessment						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Building Locations								
Kirkland Zoning Code	KZC 90 Drainage Basins	Existing regulations allow reductions in side and rear yards.	-locate buildings away from critical areas, -preserve soils with good infiltration	No Gap	No Revision - Chapter 90 allows reductions in side and rear yards, and encourages clustering to locate buildings away from critical areas.		X	
Kirklnl Zoning Code	KZC 90 Drainage Basins	Code requires buildings be set back from critical areas and their buffers including wetlands, streams and steep slopes/landslide hazard areas.	-locate buildings away from critical areas, -preserve soils with good infiltration	Consider preserving soils with good infiltration.	No Revision needed. New Storm Manual to be adopted 12/2016 will require infiltration if feasible so that will preserve good soils for infiltration.		X	
	KZC 114 Low Impact Development	Code requires open space		Consider requiring open space to be located in area with good infiltrative soils.	No Revision needed. Open space typically used for dispersion or infiltration of runoff, so already set aside in area with good infiltrative soils.			X
Parking area locations								
Kirkland Zoning Code	KZC 90 Drainage Basins	Parking areas may not be located in critical areas or buffers.	Locate parking areas to minimize site grading, preserve natural watercourses, native vegetation and soils.	No Gap. Current CAO revision increased critical areas and buffers. Code revision proposes to allow parking areas within 10-foot wide buffer setback, but this is still further from critical area because buffer was increased.	No Revision - existing code prohibits parking in critical areas or buffers; locates parking areas to minimize site grading, preserve natural watercourses, native vegetation and soils.		X	
Kirkland Zoning Code	KZC 15	Requirement is to provide two parking stalls per dwelling unit.	Incentive to require parking within garages	No Gap	No Revision - Small front yard setback encourages shorter driveways and garages already.	X		X
			Encourage parking near entrance to site to reduce long driveways	No Gap	No Revision - Urban development minimizes driveway lengths already.	X		X
Stormwater BMP/facility locations								
2009 King County Surface Water Design Manual & Kirkland Public Works Pre-Approved Plans	KCSWDM Section 5.2.1 & COK Policies L-1 and L-2.	All projects with > 2,000sf impervious area are required to assess the feasibility of dispersion and infiltration. At a minimum, an impervious area equivalent to 10% of the site must be routed to an approved LID BMP.	Codes to require infiltration in areas with good soil.	Assess feasibility of infiltration on all projects.	No Revision - New Stormwater Design Manual to be adopted 12/2016 will require development to infiltrate in areas with good soil.			X
2009 King County Surface Water Design Manual	Section 1.2.1	All projects are required to discharge at the natural location. Gravity conveyance of storm is preferred over pumping, so it is more practical to locate a storm facility in the natural drainage path.	Code to prioritize location of storm facility.	No Gap	No Revision - Current adopted stormwater design manual requires discharge at the natural location.			X
Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets)								
Clustering Housing								
Kirkland Municipal Code	KMC 22.28.040 Lot Averaging	Lot averaging is permitted; additional lot averaging may be considered through a review process.	Are there any codes that require buildings/utilities/streets to be placed in areas that are less conducive to infiltration?	Consider requirements on building placement.	No Revision - New Stormwater Design Manual to be adopted 12/2016 will require infiltration as feasible which will facilitate buildings/utilities/streets to be located in areas that are less conducive to infiltration.			X
Location of Existing Utilities								
Kirkland Zoning Code	No Code	Gravity dictates location of utilities more than soil type	Any requirement to place utilities in areas less conducive to infiltration?	No Gap	No Revision - Gravity dictates location more than soil type.			X

Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Maximum impervious surface allowances								
Kirkland Zoning Code	Various Chapters in KZC, dependent on zones	Impervious surface lot coverage based off land use: MF - 60-70% lot coverage, SF 50%, Commercial - 80-90% lot coverage. Recently changed the lot coverage in Totem Lake Area to be calculated by zoning and not land use.	-Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas?	No Gap. Lot coverage in Totem Lake Area is generally 70-85%, even though calculated by zoning and not land use.	No Revision - maximum impervious surfacce limits are primarily based off of land use. Residential areas already contain the lowest lot coverage allowance at 50%.	X		X
Kirkland Zoning Code	KZC 114 Low Impact Development	Encourages minimizing impervious surface, allows clustering, reduced lot size, and consolidated open space if storm LID BMPs are used.	-Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas?	Review incentives under this code, modify so not offering incentives for required items once new storm design manual is adopted 12/2016.	To be determined	X		X
	KZC 115.90 Calculating lot coverage	Pervious pavement and other items receive 50% credit towards maximum impervious lot coverage.		Consider removing 50% lot coverage incentive items since new storm design manual to be adopted 12/2016 will require pervious surfaces if feasible.	Remove lot coverage exemption items in KZC 115.90.3 (a) permeable pavement, (b) grassed modular grid pavement, and (d) pervious surfaces in compliance with the stormwater design manual.	X		X
	KZC 115.90 Calculating lot coverage	Rockeries/retaining walls count towards impervious area lot coverage.		Rockeries/retaining walls are difficult for staff to measure and verify, often installed later, and if vegetation is on both sides then runoff is dispersed. Consider removing rockeries/retaining walls from impervious area lot coverage calculations when not integral to a structure, or located elsewhere on lot where runoff is dispersed.	Add the following Exception to lot coverage: d. Rockeries and retaining walls, unless integral to an adjacent structure (like a patio, building, or parking area).	X		X
	KZC 115.90 Calculating lot coverage	Synthetic turf (e.g., Astroturf) on residential properties counts towards impervious area for lot coverage because it does not meet the "open space" definition in KZC 5.10.610.		Code language may be unclear to applicants - is Astroturf impervious or pervious? Revise code to clearly state how synthetic lawn surface is counted regarding lot coverage. Consider counting 100% towards lot coverage (not "vegetated open space" so not exempt from lot coverage).	To be determined	X		X
Kirkland Zoning Code	KZC 55	CBD and Totem Lake Urban Center - 100% maximum impervious coverage allowed.	-Does code include maximum impervious surface limits for different land use types? -Can maximum impervious areas be reduced in residential areas?	No Gap	No Revision - Code allows high % impervious and encourages infill in these small business districts. Stormwater management can be provided in underground facilities. LID is not typically feasible in Totem Lake Urban Ctr due to high groundwater/poor soils.	X		X
	KZC 70 Holmes Point Overlay	Code limits the amount of impervious lot coverage (see lot coverage table).		No Gap	No Revision - Existing code limits the impervious surface area allowed (less than other areas of the city) and requires open space with development.	X		X
	KZC 83 Shoreline Management	Code limits the amount of impervious lot coverage and requires pervious pavement in setbacks.		No Gap	No Revision - Existing code limits impervious surface area.	X		X
Kirkland Comprehensive Plan	E 1.13, 1.15, 1.16;	General policies to encourage less impervious surface area.			No Gap	No Revision - Existing policies encourage less impervious surface area.	X	
Kirkland Zoning Code	Various chapters, depending on commercial zone	Commercial - 80-90% lot coverage, no limit on pollution generating impervious surface area.	Can a limit be designated for pollution generating impervious?	Could be considered in future zoning code changes.	No Revision - Current high land values push parking garages, which automatically create less PGIS flowing to storm system.	X		X

Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces (continued)						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Shared driveways								
Kirkland Zoning Code	KZC 105	Language for required easements between commercial and multi-family for shared access and for connectivity.	Can shared driveways be allowed for multiple SFR, MF, and commercial?	No Gap	No Revision - Current code includes language for required easements for shared access.	X		X
Kirkland Public Works Pre-Approved Plans	Policy R-4, (II.1.d)	Whenever practical, consolidation of driveways of adjoining properties is encouraged. Therefore, in conjunction with approval of development the City may request developers to provide access and circulation easement to an adjacent owner where joint access is reasonable to serve future development.		No Gap	No Revision - Current policy allows and encourages shared driveways for SFR. This is dependent on size and shape of lots, and is market driven.	X		X
		Always required with commercial and Multi-family.		No Gap	No Revision - Current policy requires shared driveways for commercial and multi-family	X		X
Minimum driveway width								
Kirkland Public Works Pre-Approved Plans	Policy R-4, Section II.5	Single family: 10' for one-way, 20' for two-way. Multi-Family/Non-Residential: 12-15' for one-way, 20-24' for two-way. If medians, traffic islands and turn lanes are used in driveway, greater width shall be considered.	Can the minimum width be reduced to 9' (one lane), 18' (two lanes) or 16' (shared)? Any safety issues?	No Gap	No Revision - Current code is already reduced at 10' and 20' width. Reductions to 9', 18' are currently considered on a case by case basis. Requiring the narrower driveways has been considered, but this pushes parking into the street, which has a negative impact on available neighborhood parking.	X		X
Use of permeable pavement for driveways								
Kirkland Municipal Code	KMC 19.12.130 Specifications	Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Works Construction"	Allow alternative surfaces for driveways.	Consider changing reference to same as KZC 110.65 Engineering Standards (Pre-Approved Plans). See same change on Table 8.	Revise text to refer to KZC 110.65 Engineering Standards.	X		X
Kirkland Zoning Code	KZC 105.100	Driveway materials must match or exceed the adjacent road. Pervious surfaces can be used in compliance with the adopted stormwater design manual.	Allow alternative surfaces for driveways.	No Gap	No Revisions - current code allows for pervious pavement driveways.	X		X
Kirkland Public Works Pre-Approved Plans	Driveway Policy R-4, (II.1.g)	Driveway materials must match or exceed the adjacent road. Pervious surfaces can be used in compliance with the adopted stormwater design manual.		No Gap	No Revisions - current policy allows for pervious pavement driveways.	X		X
	Plans No. CK-L.07, L.08, L.09	Driveway details for: Pervious Concrete, Porous Asphalt, and Permeable Pavers.		No Gap	No Revisions - current code allows for pervious pavement driveways.	X		X
2009 King County Surface Water Design Manual	Section C.2.6	Permeable Pavement section including: porous concrete, porous asphalt, unit pavers with a gravel bed, and grassed modular grid systems.		No Gap	No Revisions - current storm design manual (and manual to be adopted 12/2016) allows for pervious pavement driveways.	X		X
Use of permeable pavement for driveways (continued)								
Kirkland Comprehensive Plan	U-4.4	Encourages use of permeable pavement, and lists practices.	Can code be revised to include incentive?	No Gap	No Revision - Current code encourages use of permeable pavement, incentives offered under other codes (50% credit to lot coverage and 50% flow control credit).	X		X
2009 King County Surface Water Design Manual	Section C.2.6	Pervious pavement is counted as 50% impervious (instead of 100%), provides a flow control credit as incentive.		No Gap	No Revision - Current design manual counts pervious pavement as 50% impervious (instead of 100%), provides a flow control credit as an incentive. New storm design manual ato be adopted in 12/2016 requires pervious pavement as feasible.	X		X

Table 3. Gap Analysis for Topic: Hard and Impervious Surfaces (continued)						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Two-track driveway design								
Kirkland Public Works Pre-Approved Plans	Driveway Policy R-4, Section I.8	Two-track driveway design is allowed for single family residential through modification process (approved on a case-by-case basis). Not allowed for multi-family or commercial access.	Is two-track driveway design allowed?	No Gap	No Revision - Two-track driveway design is allowed for SFR through the modification process (approved on a case-by-case basis). Traffic volume is too high to allow this on multi-family or commercial properties.	X		X
Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets)								
Vegetative Roofs								
Kirkland Zoning Code	KZC 115.90 Calculating lot coverage	Vegetated roofs are allowed, is not exempt from impervious lot coverage.	Are vegetated roofs allowed or incentivized?	No Revision	No Revision - Current code allows vegetated roofs. New storm design manual to be adopted 12/2016 removes 50% pervious credit.	X		X
2009 King County Surface Water Design Manual	Section 5.2.2	Vegetated Roofs are allowed, and receive 50% pervious credit as incentive. Vegetated roofs are tracked along with other stormwater BMPs.		No Revision	No Revision - Current design manual counts vegetated roofs as 50% impervious (instead of 100%), provides a flow control credit as an incentive. New storm design manual to be adopted 12/2016 removes 50% pervious credit.	X		X

Table 4: Gap Analysis for Topic: Bulk and Dimensional Considerations								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Building setbacks, lot setbacks								
Kirkland Zoning Code	KZC 15	Refer to Density/Dimensions Table	Consider reducing setback distances.	No Gap	No Revision - Because Kirkland has adopted narrow street standards, it is important to provide off-street parking for residents, so reducing driveway length is counter productive.	X		X
	KZC 15	Refer to Density/Dimensions Table	Consider reducing frontage area requirements in open space residential developments.	No Gap	No Revision - Kirkland has small lots that already minimize frontage improvement requirements.	X		X
	KZC 15	Current code allows irregular lot shapes.	Consider allowing irregular lot shapes.	No Gap	No Revision - Current code allows irregular lot shapes.	X		X
Height limits								
Kirkland Zoning Code	KZC 15	Refer to Density/Dimension Table. Maximum height restriction currently cannot be increased.	Consider increasing maximum building height restriction if a project reduces the footprint below maximum lot coverage.	No Gap	No Revision - City has given height bonuses in areas with high % lot coverage, but not in residential areas.	X		X
Maximum square footage								
2009 King County Surface Water Design Manual	Section 5.2	A covenant for reduced lot coverage is a current option to meet flow control requirements. Since land value is high, projects typically build out to the maximum allowable lot coverage.	Consider revising code to incentivize or encourage minimizing building footprints.	No Gap	No Revision - Reduced lot coverage (reduced footprint) is currently an option to meet flow control standards (incentive).	X		X
Kirkland Zoning Code	KZC 70 Holmes Point Overlay	Code restricts impervious square footage to lower than other areas in Kirkland		No Gap	No Revision - Current code restricts impervious square footage to lower than other areas in Kirkland.	X		X
	KZC 114 Low Impact Development	Code offers incentive to provide reduced impervious footprints and increased open space.		No Gap	No Revision - Current code offers incentive to provide reduced impervious footprints and increased open space.	X		X
Clustering								
Kirkland Zoning Code	KZC113	Cottage housing is currently allowed	Consider allowing cluster development designs, with no special permit or zoning variance.	No Gap	No revision - Current code allows cottage housing.	X		X
Kirkland Zoning Code	PUD Subdivision	Clustered housing is currently allowed.When developments are proposed using the flexibility in Chap 114 (LID), no PUD is required.	Consider allowing cluster development designs, with no special permit or zoning variance.	No Gap	No Revision - Current code provides options and a process for clustering in single family and multi-family zones.	X		X
	KZC 114 Low Impact Development	Encourages clustering of houses, offers incentives	Allow cluster development designs.	No Gap	No Revision - Current code encourages clustering of houses.	X		X
Additional Sub-Topics to Consider (Beyond Ecology Focus Sheet)								
Stormwater facility setbacks								
2009 King County Surface Water Design Manual	Sections 5 and 6	Setbacks vary for different facility types, and Kirkland is flexible on a case-by-case basis. Minimum setbacks are required for maintenance access and functionality (e.g. infiltration systems). Kirkland does not require additional an setback from the easement for a stormwater facility.	Consider reducing setbacks from stormwater facilities.	No Gap	No Revision - Setbacks vary for different facility types, and Kirkland is flexible on a case-by-case basis. Minimum setbacks are required for maintenance access and functionality (e.g. infiltration systems). Kirkland does not require an additional setback from the easement for a stormwater facility.	X		X

Table 5: Gap Analysis for Topic: Subdivision and Planned Unit Development						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Individual open space requirements								
Kirkand Zoning Code	KZC 70 Holmes Point Overlay (HPO)	Open space is required, and is required to be kept in natural condition.	Consider requiring open space managed in the natural condition. Can this be increased? Required to be consolidated into larger units?	No Gap	No Revision - Code already requires open space in Holmes Point area, and for it to be kept in natural condition.		X	X
	Native Growth Protection Easement	Open space is required to be kept in natural condition.		No Gap	No Revision - Open space is required to be kept in natural condition.		X	X
	KZC 114 Low Impact Development	Open space is required, and is required to be kept in natural condition.		No Gap	No Revision - This code already requires open space, and for it to be kept in natural condition.		X	X
	Clustered Housing Section (KZC 113)	Requirement to provide open space, but not to preserve it in natural condition.		Consider changing to require natural condition of open space.	No Revision - the purpose of open space in cottage development is to provide shared recreational/gathering space since individual lots are small and don't provide this. Space should not be required to be left in natural condition since it must be conducive to recreation/gathering.		X	X
Neighborhood Plan	Finn Hill Neighborhood Plan; Potential KZC 70 change	Finn Hill Neighborhood Plan is currently under revision (2016).	Consider requiring open space managed in the natural condition.	Open space requirements are currently being considered while Neighborhood Plan is under revision (expanding HPO to Finn Hill).	No Revision at this time - Code change to be determined by outcome of Neighborhood Plan, under revision in 2016.		X	X
Passive vs. active open space requirements (consider LID BMPs in passive areas)								
Kirkland Zoning Code	KZC 114 Low Impact Development	Code includes allowable and prohibited uses for open space, minimal amount can be structures, LID BMPs like bioretention are allowed in open space.	Define allowable and prohibited uses, consider allowing LID BMPs like bioretention in open space.	No Gap	No Revision - Code includes allowable and prohibited uses for open space, and LID BMPs like bioretention are allowed.			X
	KZC 70 Holmes Point Overlay	Code includes allowable and prohibited uses for open space, LID BMPs like bioretention are not allowed in open space (must be native vegetation).		No Gap	No Revision - Code includes allowable and prohibited uses for open space, but open space must contain native vegetation in a natural setting. LID BMPs like bioretention are not allowed because that would require maintenance work in the open space.			X
	Native Growth Protection Easement	Open space is required to be kept in natural condition		No Gap	No Revision - NGPE open space is required to be kept in natural condition, so LID BMPs are not appropriate or allowed			X
	Native Growth Protection Easement	Active recreation not allowed in open space	Consider active recreation in open space.	No Gap	No Revision - this is not applicable to COK, we don't have large subdivisions with large areas set aside that could be used for dual purposes.			X
Opportunities for performance based designs (PUDs)								
Kirkland Zoning Code	KZC 125 Planned Unit Development	PUDs are not required for high density areas.	Are PUDs required for high density areas, city centers?	No Gap	No Revision - Kirkland does not need a requirement for PUDs in high density areas.			X
		Code specifies native vegetation and maximum impervious surface standards.	Specify native vegetation and maximum impervious surface standards.	No Gap	No Revision - Code already specifies native vegetation and maximum impervious surface standards.	X	X	X

Table 6: Gap Analysis for Topic: Critical Areas and Shoreline Management

Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Wetlands								
Kirkland Zoning Code, Chapter 90 - Drainage Basins	KZC 90.45 (4) Water Quality Facilities	WQ facilities allowed within outer one-half (1/2) of wetland buffer (with conditions).	Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements?	Consider specifying the type of WQ facility/LID BMP allowed under current CAO update.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
		WQ facilities allowed elsewhere within wetland buffer if proposed by public agency (with additional conditions).		Consider changes under current CAO update.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
	KZC 90.45 Wetland Buffers and Setbacks	LID BMPs not mentioned in code.		Consider specifying the type of WQ facility/LID BMPs allowed under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
Kirkland Zoning Code, Chapter 90 - Drainage Basins	KZC 90.45 Wetland Buffers and Setbacks	Allowable and Prohibited uses defined.	Are allowable and prohibited uses defined?	No Gap	No Revision - Allowable and Prohibited uses in wetland buffers and setbacks are already defined.			X
	KZC 90.65 Wetland Restoration, refers to KZC 95.50(11) Mitigation and Restoration Plantings in Critical Areas/Buffers	Approved plants are in Kirkland Plant List, which is produced by the City's Natural Resource Management Team.	Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements?	Consider adding Stormwater Bioretention Areas and associated plants as allowable within Critical Area Buffers (for buffer enhancement). See Ecology guidance from SEA.	No Revision - This is not recommended under Ecology wetland guidance.			X
Streams								
Kirkland Zoning Code, Chapter 90 - Drainage Basins	KZC 90.90 (3) Storm Water Outfalls	Piped stormwater outfalls/dispersion allowed within stream buffer and setback (with conditions).	Are LID BMPs allowed within or adjacent to buffers? Can native vegetation associated with LID BMPs be used to meet buffer enhancement requirements?	Consider changes under current CAO update.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
	KZC 90.90 (4) Water Quality Facilities	WQ facilities allowed within outer one-half (1/2) of stream buffer (with conditions).		Consider specifying the type of WQ facility/LID BMP allowed under current CAO update.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
		WQ facilities allowed elsewhere within stream buffer if proposed by public agency (with additional conditions).		Consider changes under current CAO update.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
	KZC 90.90 Stream Buffers and Setbacks	LID BMPs not mentioned.		Consider including language to specify LID BMPs under current CAO update. Options to consider are: Infiltration, Dispersion, Bioretention, and Permeable Pavement. Rainwater Harvesting and Vegetated Roof not likely because this would involve structures in buffer or setback.	This may be revised. KZC Chapter 90 currently under revision to be consistent with Best Available Science (BAS).			X
Kirkland Zoning Code, Chapter 90 - Drainage Basins	KZC 90.90 Stream Buffers and Setbacks	Allowable and Prohibited uses defined.	Are allowable and prohibited uses defined?	No Gap	No Revision - Allowable and Prohibited uses in stream buffer and setbacks are already defined.			X

Table 7: Gap Analysis for Topic: Clearing and Grading						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Protect existing infiltration/minimize compaction								
Kirkland Zoning Code	KZC 95.30	No speculative grading - can only clear and grade to the extent necessary for approved access and utility improvements. Prior to individual building permit approval, can only clear for homes if short plat/subdivision was approved with an Integrated Development Plan (IDP).	Include provisions to minimize site disturbance and protect native vegetation and soils (minimize compaction).	No Gap	No Revision - Code does not allow speculative grading; cannot clear for houses when only working on the road portion. This minimizes site disturbance, protects existing infiltration areas, and prevents compaction.		X	
Kirkland Municipal Code	KMC 29.24.010 Land Surface Modification	Municipal code does not include provisions for minimizing site disturbance or protecting native vegetation and soils.		Consider adding provisions for minimizing site disturbance and protecting native vegetation and soils.	No revision - Zoning code and design standard address actions to protect existing infiltration and minimize compaction.		X	
Kirkland Public Works Pre-Approved Plans	Erosion Plan Note 27	Area to be used for infiltration must be surrounded by silt fence prior to construction and until final stabilization.		No Gap	No Revision - Note 27 requires the area used for infiltration to be surrounded by silt fence prior to construction and until final stabilization.		X	
Conserve native vegetation/soils								
Kirkland Zoning Code	KZC 5	No definition for native vegetation.	Define native vegetation, including minimum tree density, minimum retention requirements, protecting native vegetation areas, replanting requirements, soil amendment standards, management plan specifications, and maintenance requirements.	Consider adding a definition for "native vegetation"	Consider using/modifying the definition in the Ecology NPDES Municipal Stormwater permit for Western WA (see page 70/74).		X	
Kirkland Zoning Code	KZC 95	Tree density table	In "native vegetation" definition or other code section, include: minimum tree density, minimum retention requirements, protect native vegetation areas, replanting requirements, soil amendment standards, management plan specifications, and maintenance requirements.	Consider modifying tree density table (see Table 1 Topic Landscaping, Native Vegetation).	No Revision needed here - Changes to be considered under the Landscaping, Native Vegetation, and Street Landscaping (Table 1).		X	
	KZC 95 Tree Management and Required Landscaping	Permit is required for tree removal, Tree Retention Plan is required for development activity.	Regulation to require or encourage preservation of natural vegetation.	No Gap	No Revision - Code protects native vegetation by requiring a permit for tree removal, and requiring a Tree Retention Plan with development activity.		X	
	KZC 85 Geologically Hazardous Areas	Code provides slope protection by defining landslide/erosion/seismic hazard areas, and requiring geotechnical report as needed.	Conserve native soils	No Gap	No Revision - Code conserves native soils by requiring slope protection and a geotechnical report as needed for development activity.		X	
	KZC 95.30	No speculative grading - can only clear and grade to the extent necessary for approved access and utility improvements. Prior to individual building permit approval, can only clear for homes if short plat/subdivision was approved with an IDP.	Prohibit or limit wholesale clearing/mass grading of sites.	No Gap	No Revision - Kirkland protects existing infiltration areas and prevents compaction per current code.		X	
	KZC 70 Holmes Point Overlay	Open space kept in natural conditions is required.	Requirement to set aside an undeveloped portion of site, and specific native vegetation retention standards based on land use and density.	No Gap	No Revision - Code requires open space set aside in undeveloped condition with native vegetation.		X	
	KZC 95.5	Maintenance of invasives in sensitive areas could be enforced with existing code.		No Gap	No Revision - Kirkland has a prohibited plant list providing a higher level of control.		X	
Kirkland Municipal Code	KMC 29.24.010 Land Surface Modification	Item (d) requires marking the limit of grading with temporary fence and signage. Item (e) requires protective tree fencing.	Regulation to require or encourage preservation of natural vegetation.	Consider adding provisions to require or encourage preservation of natural vegetation (beyond items d and e).	No Revision - Zoning code and design standard also address preservation of natural vegetation.		X	

Table 7: Gap Analysis for Topic: Clearing and Grading (continued)						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Conserve native vegetation/soils								
Kirkland Municipal Code	KMC 15.52.010 Surface Water Utility	Surface Water Utility on property tax statement is based on actual impervious area (for commercial and multi-family). Less impervious = Lower utility cost. King County assessment is lowered for critical areas.	Are there any incentives to landowners/developers to conserve land?	No Gap	No Revision - Incentive already exists to conserve land; since utility cost is based on actual impervious area.	X	X	
2009 King County Surface Water Design Manual	Chapter 5 Flow Control	Stormwater control based on impervious area, stormwater credits given for infiltration and dispersion BMPs. Lower cost for flow control if section of land is not developed.		No Gap	No Revision - Incentive already exists to conserve land; utility cost is based on actual impervious area.	X	X	
Kirkland Public Works Pre-Approved Plans	Policy D.10 Addendum to 2009 KCSWDM, section 1.2.5.1	Amended Soil (per BMP T5.13) is required for all landscaped areas on all project sites 1 acre or larger, and recommended for sites < 1 acre.	Conserve native soils and vegetation	No Gap	No Revision - Existing standard requires soil amendment on larger projects. New Storm manual to be adopted 12/2016 will require amended soil on all qualifying projects.			X
	Erosion Control Section, E.12 Soil Amendment Notes for BMP T5.13	Detailed notes designed for the contractor to use when amending soils.		No Gap	No Revision - Existing standard provides notes to contractor on soil amendment.			X
	Erosion Control Section, E.1-E.12	This section includes BMPs to provide tree and slope protection during clearing and grading activities.		No Gap	No Revision - Existing standards include BMPs to provide tree and slope protection during clearing and grading.		X	
Construction sequencing/phasing								
Kirkland Municipal Code	KMC 15.52.060 Design and construction standards and requirements	Code requires construction projects to follow COK standard plans (pre-approved plans).	Include in code, methods for effective construction sequencing to minimize site disturbance and soil compaction.	No Gap	No Revision - Existing code requires the use of Kirkland Pre-Approved Plans, which includes construction sequencing/phasing.			X
	KMC 29.24.010 Land Surface Modification	Code does not refer to construction sequence.		Consider adding provisions to require construction sequencing or phasing.	No revision - construction sequence addressed elsewhere in code.			X
Kirkland Zoning Code	KZC 95.50	Code states after soil preparation is completed, motorized vehicles shall be kept off to prevent excessive compaction and underground pipe damage.		No Gap	No Revision - Existing code requires vehicles to be kept off amended soil to minimize site disturbance and soil compaction.			X
COK PW Pre-Approved Plans	Erosion Control Plan Notes	Requirements for construction sequencing/phasing is included in the plan notes for all projects (except single family infill).	In engineering and street standards, outline construction sequencing and practices for protecting pervious areas and LID BMPs during construction.	No Gap	No Revision - Existing plan notes contain requirements for construction sequencing/phasing.			X
	Erosion Plan Note 27	Area to be used for infiltration must be surrounded by silt fence prior to construction and until final stabilization.		No Gap	No Revision - Note 27 requires the area used for infiltration to be surrounded by silt fence prior to construction and until final stabilization.			X
Kirkland Municipal Code	KMC 15.52.060 Design and construction standards and requirements	Code does not limit clearing to just the building footprint.	Consider revising code to limit clearing to the building footprint and area needed for maneuvering machinery.	No Gap	No Revision - It is not realistically feasible to limit clearing to an area a little larger than the building footprint.			X

Table 8: Gap Analysis for Topic: Streets and Roads								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Travel lane widths								
Kirkland Zoning Code	KZC 110.25	Current regulations include narrow travel lane widths (10') see link	Minimize travel lane widths - 10'	No Gap	No Revision - Existing code is already at suggested minimum narrow travel lane width.	X		
	KZC 110.27	Current regulation includes narrow alley width (12') see link		No Gap	No Revision - Existing code includes 12' minimum alley width, which is less than suggested minimum for each travel lane.	X		
	KZC 110.30, 110.35, 110.38	Neighborhood Access Streets, R-20, R-24, R-28, include minimum street widths from 20' to 28'.		No Gap	No Revision - Existing code includes minimum street widths.	X		
	KZC 110.40	Collector Streets include minimum lane width of 11'.		No Gap	No Revision - Existing code includes minimum street widths feasible for street type designation.	X		
ROW widths								
Kirkland Zoning Code	KZC 110.30, 110.35	Neighborhood Access Streets, R-20, R-24, include minimum ROW at 30'.	Minimize ROW width or include flexibility for LID considerations.	No Gap	No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW.	X		
	KZC 110.38	Neighborhood Access Streets R-28, include minimum ROW at 40'.		No Gap	No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW.	X		
	KZC 110.40	Collector Streets include minimum ROW at 60'.		No Gap	No Revision - Existing code includes a minimum ROW. Reducing ROW further would inhibit the ability to install LID in ROW.	X		
	KZC 110.65 Engineering Standards	Design standards allow sidewalks on one side of street only on a case-by-case basis.	Allow sidewalks on one side of street only in low-density residential areas.	No Gap	No Revision - Changes to design standards are allowed on a case-by-case basis.	X		
	KZC 110.65 Engineering Standards	Design standards allow streets with no sidewalks or other alternatives on a case-by-case basis.	Allow alternate pedestrian networks (e.g., trails through common areas) be substituted for sidewalks.	No Gap	No Revision - Changes to design standards are allowed on a case-by-case basis.	X		
Use of permeable pavement for streets and roads								
Kirkland Public Works Pre-Approved Plans	Pre-Approved Plans, Design Criteria	Permeable pavement is allowed for private streets, and allowed on a case-by-case basis for public streets (no written policy).	Can permeable pavement be used for road shoulders, parking lanes, and emergency parking areas?	Consider adding a written policy to the Pre-Approved Plans.	Develop written policy on when permeable pavement will be used on private and public streets and alleys; including when to use for travel lanes, road shoulders, parking lanes, and emergency parking areas. Include requirements dictated by new storm design manual.	X		
		Plans do not include a standard detail for permeable streets.		Consider adding standard details for permeable streets to the Pre-Approved Plans.	Develop standard details for pervious pavement streets, private and public.	X		
Kirkland Municipal Code	KMC 19.12.130 Specifications	Specifications for street and curb cutting, refers to 1977 Edition of "Standard Specifications for Municipal Public Works Construction".		Consider changing reference to same as KZC 110.65 Engineering Standards (Pre-Approved Plans). See same change on Table 3.	Revise text reference to KZC 110.65 Engineering Standards	X		
Kirkland Zoning Code	KZC 110.65 Engineering Standards	Permeable pavement is allowed for private streets, and allowed on a case-by-case basis for public streets.	Can permeable pavement be used for road shoulders, parking lanes, and emergency parking areas?	No Gap	No Revision - Code refers to Kirkland Pre-Approved Plans, and those will be revised (see above).	X		
Placement of utilities under paved areas in the ROW								
Kirkland Zoning Code	KZC 110.65 Engineering Standards	Utilities are allowed under roadways, no language stating utilities cannot be under road.	Does code allow utilities to be placed under the paved section of ROW?	No Gap	No Revision - current code allows utilities to be placed under paved ROW.	X		
Required truck turn around area								
Kirkland Zoning Code	KZC 110	Kirkland has the smallest cul-de-sac diameters, reduced from 90ft to 70ft diameter in 1995.	Is the minimum street section necessary for safe access and emergency response being used?	No Gap	No Revision - Kirkland has the smallest allowable cul-de-sac diameters, reduced from 90ft to 70ft diameter in 1995 (smallest amount allowed by fire department).	X		

Table 8: Gap Analysis for Topic: Streets and Roads (continued)								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Sidewalk widths								
Kirkland Zoning Code	KZC 110.30, 110.35, 110.38, 110.40	Neighborhood Access Streets, R-20, R-24, R-28, & Collector Streets include minimum sidewalk at 5'.	Consider reduction to minimum sidewalk widths.	No Gap	No Revision - Existing code includes minimum sidewalk width at 5'.	X		
	KZC 110.52	Sidewalks in Design Districts use Pedestrian-Oriented Street Standards, with minimum sidewalk widths of 8'.		No Gap	No Revision - Existing code includes minimum sidewalk width of 8' needed for heavy pedestiran use on commercial streets.	X		
Kirkland Public Works Pre-Approved Plans	Plan CK-R.23	5' minimum	Consider reduction to minimum sidewalk width in areas where LID BMPs are present.	No Gap	No Revision - Smaller width not needed if permeable pavement is used, or sloped towards bioretention area.			X
Permeable pavement for sidewalks & sidewalk slope								
Kirkland Municipal Code	KMC 19.20.030	Code identifies maintenance of sidewalk is the responsibility of abutting property owner (this includes repairs if need is caused by abutting property owner).	Allow permeable pavement for sidewalks	Consider Revision. New Storm Design Manual adopted 12/2016 will require either pervious pavement sidewalks or adjacent bioretention areas. Current city staff allocation is not adequate to take on maintenance of all sidewalks and bioretention areas. Recent maintenance standards recommend pressure washer and vacuum system "calibrated to not dislodge wearing course aggregate".	To be determined	X		
Kirkland Public Works Pre-Approved Plans	Policy R-15	List of permitted groundcover species in public Right-of-Way landscape strip. Policy states maintenance is the responsibility of the adjacent property owner.	New storm design manual will require bioretention area instead of standard landscape strip if traditional impervious sidewalk is used instead of pervious pavement.	Consider Revision. New Storm Design Manual to be adopted 12/2106 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area.	To be determined			X
	Plan CK-R.23	Design standard is 2% max slope towards road. ROW includes a landscape strip between sidewalk and road, so sidewalk slopes towards landscape strip.	Allow sidewalk slope toward landscape strip, LID BMP, or other.	Consider Revision. New Storm Design Manual adopted 12/2016 will require either pervious pavement sidewalks or traditional sidewalks draining to a bioretention area.	Modify design standard to show sidewalk draining to landscape strip/bioretention/road; depending on requirements in new storm design manual.			X
Kirkland Zoning Code	KZC 110	Landscape strips are required on all streets other than alleys.	New storm design manual will require bioretention area instead of standard landscape strip if traditional impervious sidewalk is used instead of pervious pavement.	No Gap	No Revision - existing code requires landscape strip on all streets; landscape strip details (like bioretention) are referenced in Kirkland Pre-Approved Plans.			X
Kirkland Zoning Code	KZC 110.65 Engineering Standards	Code allows permeable pavment to be used for sidewalks.	Allow permeable pavement for sidewalks	No Gap	No Revision - Code refers to Kirkland Pre-Approved Plans, and those already allow permeable pavement sidewalks.	X		
Permeable pavement for sidewalks & sidewalk slope								
Kirkland Public Works Pre-Approved Plans	Plan CK-L.06	Pervious concrete allowed for public sidewalks (required when sidewalk is within wetland and strream buffers).	Allow permeable pavement for sidewalks	No Gap	No Revision - Design standard allows permeable pavement for sidewalks.	X		
Minimum cul-de-sac radius								
Kirkland Public Works Pre-Approved Plans	Plan CK-R.15	Plan includes R=35' for cul-de-sacs.	Allow minimum Radius of 35'	No Gap	No Revision - Standard is already at minimum 35' radius recommended.	X		
		Center Islands are allowed.	Require or encourage landscape islands?	No Gap	No Revision - Center islands are allowed, but they require more ROW so are less popular to developers, and require plant maintenance.	X		
Alternatives to cul-de-sacs(turn-around)								
Kirkland Public Works Pre-Approved Plans	Plan CK-R.16	Plan includes 60' x 20' turnaround.	Allow 60' x 20' T-shaped turn-around, and loop road as option.	No Gap	No Revision - Design standard is already at minimum size recommended for turnaround.	X		

Table 9: Gap Analysis for Topic: Healthy Soils								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Protecting and restoring healthy soils								
Kirkland Zoning Code	KZC 95.34 and KZC 95.50.4	KZC 95.34 implies protection of existing soil (w/ trees). KZC 95.50 intends to address soil restoration	Is there a soil management plan in place that identifies soil protection zones and describes quantities of compost amendment? Are protection areas required to be fenced?	Does not refer to PW Pre-Approved Plans. KZC 95.50. Consider removing soil compaction density reference, etc.	Revise code to reflect BAS/BMPs, refer to PW Pre-Approved Plans, specify 'soil' in 95.34 (protection) and 95.50 (restoration).			X
Kirkland Public Works Pre-Approved Plans	Policy D-2, D-3	TESC Plan is required for all development.		Require a separate Soil Management Plan document for all LSM permits, and for multi-family and commercial BLD permits. Document is tool for staff to help verify amended soil requirement is met.	Revise Pre-Approved Plans (2017) to include a soil management plan document (like King County's document).			X
	Details R.48, R.48A	Tree planting details		Currently considering revisions to include adequate soil volume.	Revise Pre-Approved Plans (2017) to include adequate soil volume.			X
2009 King County Surface Water Design Manual		TESC Plan is required for all development. KC starting requiring a Soil Management Plan around 2011. It was not in 2009 KC Manual.	Is there a soil management plan in place that identifies soil protection zones and describes quantities of compost amendment? Are protection areas required to be fenced?	New SW design manual to be adopted by 12/2016. KC manual requires a soil management plan.	No Revision - will be included with adoption of new SW Design Manual by 12/2016.			X
Kirkland Municipal Code	KMC 15.52.060, KMC 15.04.340	Codes refer to 2009 KCSWDM and PW Pre-Approved Plans		No Gap	Codes will be updated with adoption of new SW Design Manual (12/2016).			X
Kirkland Zoning Code	KZC 70 Holmes Point Overlay	Required to set aside 25% protected open space.		No Gap	No Revision - current code requires 25% area set aside, which meets intent of protecting native soils.			X
Compost amendments								
Kirkland Zoning Code	KZC 95.50.4 Installation Standards for Required Plantings	Item 4 intends to address soil amendments with plant installation.	Does code require amendment of disturbed soil? Are there incentives for compost on small projects?	Item 4 is vague; does not use industry standard soil specs, does not state soil quality shall comply with requirements of the PW Pre-Approved Plans. Update re: soil compaction density, amendments, etc. Should link to pending soil req'ments.	Modify code to add requirement for compost amendments per Ecology BMP T5.13 (since amended soil will be required for all landscaping under new SW Design Manual, to be adopted 12/2016).			X
Kirkland Public Works Pre-Approved Plans	Plan No. CK-E.12	Soil Amendment Notes for using BMP T5.13		Worked soil depth of 12" may not be adequate, consider increasing to 18".	Consider increasing worked soil depth from 12" to 18".			X
Kirkland Public Works Pre-Approved Plans	Policy D-10, 1.2.5.1	Amended Soil (BMP T5.13) required for all landscaped areas on all project sites 1 acre or larger, recommended on smaller sites.	Does code require amendment of disturbed soil? Are there incentives for compost on small projects?	No Gap	No Revision - current policy requires amended soil for projects 1 acre or larger. Adoption of new SW manual will require amended soil on all projects.			X
Compaction								
Kirkland Zoning Code	KZC 95.50.4	After soil preparation is completed, motorized vehicles shall be kept off to prevent excessive compaction and underground pipe damage.	Can the code be revised to include different types of equipment for clearing and grading to minimize compaction? Are there any limits or restrictions on clearing, grading, and soil disturbance outside the bldg footprint?	No Gap	No Revision - code requires contractor to keep motor vehicles off soil to prevent excessive compaction.			X
	KZC 95.34	Existing soils out to drip line of trees are required to be retained and protected with tree fencing. No limits on type of equipment used.		No Gap	No Revision - code requires contractor to protect soils around trees out to the drip line to prevent excessive compaction.			X
Kirkland Public Works Pre-Approved Plans	Erosion Control Plan Note 27	Any area to be used for infiltration or permeable pavement (including a 5-foot buffer) must be protected with fencing prior to construction and until final stabilization of site to prevent soil compaction and siltation by construction activities.	Consider requiring contractor to re-establish permeability of soils that have been compacted by construction vehicles.	No Gap	No revision - current standard requires contractor to protect the soil of areas to be used for infiltration. If infiltration facility does not function after installation, the contractor is required to restore the permeability of the soils.			X
Kirkland Municipal Code	KMC 15.52.060 Design and Construction Standards and Requirements	KMC refers to 2009 KCSWDM, which requires performance testing on bioretention or infiltration facilities. If facility fails this testing, soil permeability must be re-established. This is required and enforced through building/development permit.	Consider requiring contractor to re-establish permeability of soils that have been compacted by construction vehicles.	No Gap	No Revision - code refers to adopted SW Design Manual which requires contractor to re-establish permeability of soils that have been compacted during construction.			X

Table 10: Gap Analysis for Topic: Parking						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Minimum/maximum parking ratios								
KZC Use Zone Charts	Multifamily parking - all zones - Adopted 9/1/2015	1.2 stalls per studio, 1.3 per 1 bedroom unit, 1.6 per 2 bedroom, 1.8 per 3 bedroom. Guest parking calculated at 10% of total required spaces.	Consider reducing min # of spaces due to shared parking, proximity to transit, car sharing, etc. and/or setting a max # to reduce imperv. area.	No Gap	No Revision - current code reduced parking areas for multi-family development, adopted 9/1/2015.	X		
KZC Chapter 105 and KZC Use Zone Charts	Standard Parking Ratios	Parking ratios are: 1) provided as minimums for each use in each zone or 2) evaluated on a case-by-case basis per Section 105.103, based on the actual parking demand on existing uses similar to the proposed use.	Consider reducing minimum # of spaces due to shared parking, proximity to tyransit, car sharing, etc. and/or setting a maximum # to reduce impervious area.	No Gap	No Revision - current code includes a maximum parking standard, which is a technique suggested for Urban Centers/areas with close proximity to transit. Section 105.103 provides for modifications to allow a reduction in required parking and reductions in stalls for shared parking if a study shows that the proposed stalls will be sufficient to fully serve the use(s).	X		
	Restaurant/Tavern - most zones	1 stall/100 square feet of gross floor area						
	Retail - most zones	1 stall/300 square feet of gross floor area						
	Office - most zones	1 stall/300 square feet of gross floor area						
	Single family	2 stalls/dwelling unit						
KZC Use Zone Charts and KZC Chapter 55	Shopping Centers/Mixed Use	TL 2 (Totem Lake Mall) - case by case basis to allow flexibility and reduced parking. TL 5 (Totem Square) - case by case (with MF parking as noted above)	Consider reducing minimum # of spaces due to shared parking, proximity to tyransit, car sharing, etc. and/or setting a maximum # to reduce impervious area.	No Gap	No Revision - current code includes flexibility in parking requirements, which is a technique used in Urban Centers and other areas with close proximity to transit. Section 105.103 provides for modifications to allow a reduction in required parking and reductions in stalls for shared parking if a study shows the proposed stalls will be sufficient to fully serve the use(s). In areas with higher land values, developers often choose to use land for leasable space rather than excess surface parking. Code allows flexibility, but goal is for no excess parking.	X		
	Urban Center: Office Use and mixed use	TL 1A (office) Case by case due to proximity to transit center. TL 1B (mixed use) Case by case for non-residential and other use in mixed use		No Gap				
Permeable pavement use for parking lots (parking stalls, drive aisles)								
Kirkland Public Works Pre-Approved Plans	Permeable pavement	No standard detail yet for permeable pavement parking lot.	Allow permeable pavement for parking areas, parking lanes, and/or parking spaces.	Consider adding a standard detail for porous asphalt/pervious concrete parking lot.	Add a detail for permeable pavement parking lot to 2017 Update to Pre-Approved Plans	X		
Kirkland Zoning Code	Section 105.100	Parking area and driveway must be surfaced with material comparable or superior to r-o-w providing direct vehicle access. Pervious surface (such as pervious concrete or asphalt, or modular grid pavement) can be used per KMC 15.52.060. Grassed modular pavement may be used for emergency access areas that are not used in regular permanent circulation and parking areas.	Allow permeable pavement for parking areas, parking lanes, and/or parking spaces. Consider offering an incentive for spillover or other infrequently used parking areas to be permeable.	No Gap	No Revision - zoning code already allows permeable pavement for parking lots.	X		
2009 King County Surface Water Design Manual	Chapter 5	Permeable pavement/infiltration allowed for flow control for parking lots (stalls and drive aisles).		No Gap	No Revision - current storm design manual allows permeable pavement for parking lots.	X		
Parking stall dimensions								
Kirkland Zoning Code	Chapter 180 - Plates 1-4	Standard Stall: 8.5'x18.5', Compact Stall: 8'x16'	Minimum for Standard Stall: 9.5'x19'	No Gap	No revision - zoning code contains standard stall size of 8.5'x18.5', which is already below target of 9.5'x19'.	X		
Kirkland Zoning Code	Section 105.65	Up to 50% of required parking spaces may be designated for compact cars.	Is there a fixed % of stalls assigned to compact cars(15%-35%)?	No Gap	No revision - zoning code contains standard of 50% required parking spaces designated for compact cars, which is already below target of 35%.	X		
Driving aisle dimensions								
Kirkland Zoning Code	Chapter 180	17' and 24' depending on one or two way and compacts.	Is the driving aisle wider than required by Fire Dept? Can one-way aisles be used in conjunction with angled parking stalls instead of two-way aisles?	No Gap	No revision - zoning code contains narrowest driving aisle width allowed by Fire Dept, and one-way aisles can be used in conjunction with angled parking stalls.	X		

Table 10: Gap Analysis for Topic: Parking (continued)						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Off-street parking regulations								
Kirkland Zoning Code	KZC 105.103	Existing KZC provisions allow for modifications from parking requirements (number of stalls, location, etc.), if a parking study shows that the proposed modification will fully serve the use.	Consider mechanisms to reduce parking requirements (like shared parking, proximity to transit, car share, etc.).	No Gap	No revision - existing Zoning Code provisions already allow for modifications.	X		
	KZC use Zone Charts	Is allowed, no incentive offered	Consider incentives for structured or tuck under parking.	No Gap	No revision - taller height limits in business districts (Totem Lake, Yarrow Bay) already encourage structured parking to allow for more development on site.	X		
Additional Sub-Topics to Consider (Beyond Ecology Focus Sheets)								
Integrate storm LID BMPs (bioretention) into landscape islands								
Kirkland Zoning Code	KZC 95.44 Internal Parking Lot Landscaping Requirements	Requires min 1 tree, and LID facilities count towards landscape requirements.	Allow vegetation in LID Facilities to count towards open space or landscape requirements.	No Gap	No Revision - zoning code already allows LID facilities to count towards landscape requirements.			X
Kirkland Public Works Pre-Approved Plans	Plan No. CK-L.01,L.02, L.03, L.04	Existing Bioretention standard details can be used in parking lots.		No Gap	No Revision - existing bioretention standard detail can be used in parking lots.			X

Table 11: Gap Analysis for Topic: Design Guidelines and Standards						Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.			
Trees and bioretention								
Kirkland Zoning Code	KZC 95.50.5a Installation Standards for Required Plantings	Code refers to PW Pre-Approved Plans, which includes Kirkland Street Tree Selection List of tree species.	Are specific street tree species included in the design guidelines and standards? Are they flexible to allow alternative tree species compatible with bioretention designs?	No Gap	No Revision - code references PW Policy R-10, which includes Kirkland Street Tree Selection List.			X
Kirkland Public Works Pre-Approved Plans	Policy R-10 Street Tree Selection List, and Planting and Pruning Procedures	Policy provides a variety of recommended tree species on the tree list; contains some flexibility for different tree species on a case-by-case basis.	Are specific street tree species included in the design guidelines and standards? Are they flexible to allow alternative tree species compatible with bioretention designs?	Expand Kirkland Street Tree Selection List to include tree species compatible with bioretention designs.	Modify policy by expanding Kirkland Street Tree Selection List to include tree species compatible with bioretention designs.			X
Continuous curb requirements								
Kirkland Zoning Code	KZC 110.65 Engineering Standards	Code refers to Kirkland Pre-Approved Plans	Are conventional curbs and gutters required? Can the requirements be adjusted to allow the use of curb cuts (breaks that allow runoff to flow into bioretention cells) or "invisible" curbs (flush with the road surface)?	No Gap	No Revision - code refers to Kirkland Pre-Approved Plans which allows for flexibility on a case-by-case basis.			X
Kirkland Public Works Pre-Approved Plans	CK-R.17 Concrete Curb and Gutter	Standard includes typical curb requirements, but includes flexibility on a case-by-case basis.		No Gap	No Revision - Curb and gutter requirements are already flexible to allow curb cuts and flush curbs on a case-by case basis. For example, curb cuts to bioretention areas were installed at Garden Gate subdivision (along 112th Ave NE), and flush curbs were installed on Park Lane.			X
Kirkland Municipal Code	KMC 19.20 Sidewalks, Curbs and Gutters - Construction and Maintenance	Code refers to RCW 35.68, 35.69, 35.70		No Gap	No Revision - code refers to RCW.			X
Curb radii								
Kirkland Zoning Code	KZC 110.65 Engineering Standards	Code refers to Kirkland Pre-Approved Plans	Are minimum curb radii requirements specified for street intersections or pedestrian bulbs? Can curb radii requirements be reduced to provide additional space for LID BMPs?	No Gap	No Revision - code refers to Kirkland Pre-Approved Plans which allows for flexibility on a case-by-case basis.			X
Kirkland Public Works Pre-Approved Plans	CK-R.24 Curb Radius Standards	Standard curb radius ranges between 25' to 35', depending on street designation (neighborhood access to collector to arterial). Note 3 allows for radii down to 15' when curb bulbs are used.		No Gap	No Revision - Standard already has allowance for lower curb radii (down to 15') when curb bulbs are used.			X

Table 12: Gap Analysis for Topic: Stormwater Management and Maintenance								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Process to determine public or private maintenance responsibility								
Kirkland Municipal Code	KMC 15.52.120 Operation and maintenance of storm water facilities	1. Single Family Residential development is primarily publicly maintained. 2. Multi-family and Commercial development are privately maintained.	Is there an established process/policy to determine responsibility of stormwater maintenance?	No Gap	No Revision - Current code specifies which party has responsibility for maintenance of stormwater facilities.			X
Kirkland Standard Operating Procedures	D-2. Maintenance of Residential Stormwater Facilities	SOP D-2 provides clarification on publicly maintained residential facilities.		No Gap	No Revision - Standard Operating Procedure supports municipal code and provides additional clarification on publicly maintained residential facilities.			X
Privately Maintained Stormwater Facilities								
Private Maint - mechanism to preserve and maintain facility (tract, easement, covenant, title)								
Kirkland Municipal Code	KMC 15.52.120 Operation and maintenance of storm water facilities	Any modification of an existing drainage facility must be approved and permitted by the City.	Does the code require private stormwater facilities be located in a tract/easement?	No Gap	No Revision - Current code is adequate to preserve and maintain private stormwater facilities; requires City permit and approval for any modification to existing drainage facility.			X
		Any person or persons holding title to a nonresidential property for which storm water facilities have been required by the city of Kirkland shall be responsible for the continual operation, maintenance, and repair of said storm water facilities in accordance with the criteria set forth in Appendix A of the 2009 King County Surface Water Design Manual and the City of Kirkland Addendum to the 2009 King County Surface Water Design Manual.	Does the code require a maintenance covenant or other legal agreements for private stormwater facilities?	No Gap	No Revision - Current code is adequate to preserve and maintain private stormwater facilities; requires private party to maintain existing drainage facility per adopted City standards.			X
Kirkland Public Works Pre-Approved Plans	Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility	Policy includes maintenance agreement to be signed by private party to ensure private maintenance.	Does the code require a maintenance covenant or other legal agreements for private stormwater facilities?	No Gap	No Revision - policy contains a private maintenance agreement to be signed by private party acknowledging they agree to maintenance standards.			X
Private Maint - maintenance specifications in place								
Kirkland Municipal Code	KMC 15.52.120	Section e, 1, refers to 2009 King County Surface Water Design Manual.	Does the adopted stormwater manual outline maintenance standards and/or procedures?	No Gap	No Revision - 2009 KCSWDM outlines maintenance standards for stormwater facilities. New stormwater design manual to be adopted Dec 31, 2016 will include maintenance standards.			X
Kirkland Public Works Pre-Approved Plans	Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility	Maintenance agreement signed by private party includes maintenance standards for stormwater facilities.		No Gap	No Revision - policy contains a private maintenance agreement signed by private party that includes maintenance standards for stormwater facilities.			X
Private Maint - mechanism for access, inspection, enforcement process								
Kirkland Municipal Code	KMC 15.52	15.52.130 allows inspection. 15.52.120 requires maintenance and repairs. 15.52.140 enforcement under KMC 1.12.	Does the code allow access to inspect, maintain, repair and enforcement of the facility if a private property owner fails to maintain the facility?	No Gap	No Revision - current codes allow for the City to access, inspect, sample, and enforce maintenance and repairs as needed.			X
	KMC 1.12	KMC 1.12 includes fines and penalties determined using an enforcement penalty matrix.	Does the code include reimbursement for any City maintenance activities conducted on a private facility?	No Gap	No Revision - current codes includes fines and penalties determined using an enforcement penalty matrix. Code allows reimbursement for the cost if the City has to maintain a private facility.			X
	KMC 15.52	No reduction in stormwater fee as incentive for property owners the meet maintenance requirements.	Are incentives (reduction in stormwater fees) provided for private property owners that meet their maintenance requirements?	No Gap	No Revision - incentive for maintenance is not needed at this time; Kirkland achieves compliance through education, inspections, and by providing technical assistance to property owners.			X

Table 12: Gap Analysis for Topic: Stormwater Management and Maintenance (continued)								
Document	Section Reference	Current Regulation - key components	LID Code Consideration	Summary of Gap	Describe/Note How Revision(s) made meets Permit requirements, OR if No revision(s) made to this document, explain why.	Measures to minimize impervious surfaces	Measures to minimize loss of native vegetation	Measures to minimize stormwater runoff
Private Maint - education plan, signage								
Kirkland Municipal Code	KMC 15.52	Kirkland has an ongoing Private Maintenance Program, where city staff work with commercial and multifamily property owners to ensure they understand the stormwater facilities and structures on their property and the maintenance requirements. Staff inspect all sites on an annual or bi-annual basis, and follow up to ensure systems are adequately maintained.	Is there an education plan, signage, or other process used to inform private property owners of the required maintenance?	No Gap	No Revision - Kirkland has an ongoing Private Maintenance Program, where city staff work with commercial and multifamily property owners to ensure they understand the stormwater facilities and structures on their property and the maintenance requirements. Staff inspect all sites on an annual or bi-annual basis, and follow up to ensure systems are adequately maintained.			X
Kirkland Public Works Pre-Approved Plans	Policy D-7. Private Maintenance Agreement for a Stormwater Facility Including LID Facility	For new single family residential systems that will be privately maintained, property owners sign a private maintenance agreement, recorded with King County. The agreement includes the facility type, location, and all maintenance requirements.		No Gap	No Revision - For new single family residential systems that will be privately maintained, property owners sign a private maintenance agreement, recorded with King County. The agreement includes the facility type, location, and all maintenance requirements.			X
Publicly Maintained Stormwater Facilities								
Public Maint - mechanism to preserve and maintain facility (public Right-of-Way, tract, easement)								
Kirkland Municipal Code	KMC 15.52	Kirkland takes maintenance responsibility for all elements of the storm drainage system beginning at the first catch basin within the public Right-of-Way.	Does the code require public stormwater facilities be located in public ROW or a public easement?	No Gap	No Revision -Kirkland assumes maintenance responsibility for all parts of the storm drainage system within the ROW (starting at first catch basin), and within easements or tracts dedicated to the City.			X
Public Maint - maintenance specifications in place								
Kirkland Municipal Code	KMC 15.52.120	Section e, 1, refers to 2009 King County Surface Water Design Manual.	Does the adopted stormwater manual outline maintenance standards and/or procedures?	No Gap	No Revision - 2009 KCSWDM outlines maintenance standards for stormwater facilities. New stormwater design manual to be adopted 12/2016 will include maintenance standards.			X
Public Maint - mechanism for access and inspection								
Kirkland Municipal Code	KMC 15.52	Facilities serving single-family residential developments must be in ROW, easements or tracts dedicated to the City.	Does the code allow access to inspect, maintain, and repair stormwater facilities?	No Gap	No Revision - code is adequate to provide City access, inspection, and maintenance as needed.			X
Public Maint - education plan, signage								
Kirkland Municipal Code	KMC 15.52	Publicly maintained ponds require education signage per the 2009 King County Surface Water Design Manual. KMC refers to surface water design manual.	Is there an education plan, signage, or other process used to inform the public about maintenance of stormwater facilities?	No Gap	No Revision - code refers to the adopted storm design manual, which requires signage on publicly maintained ponds.			X
Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure (SOP)	Kirkland Public Works Pre-Approved Plans or Standard Operating Procedure	Informal policy for when signage is used on facilities other than ponds; primarily if located in high visibility public areas. There is not a written Policy on when stormwater education signage is required. City website contains educational information on publicly maintained facilities.	Is there an education plan, signage, or other process used to inform the public about maintenance of stormwater facilities?	Consider writing a policy or standard operating procedure on when educational signage is used on storm facilities/BMPs.	Adopt a sign standard to provide public education on LID stormwater facilities (function and maintenance). Add to next PW Pre-Approved Plans or SOP update in 2017.			X